To: 'Jacobus, Thomas P WAD'[Thomas.P.Jacobus@usace.army.mil]
Cc: 'Bemis, James K (Jim) NAB'[Jim.Bemis@usace.army.mil]
From: Shamet, Stefania
Sent: Tue 10/14/2014 4:42:07 PM
Subject: RE: Anticipated Bypass (UNCLASSIFIED)

Hi Tom and many, many apologies. I somehow missed this email when it was sent earlier. I have forwarded to the appropriate personnel and will be setting up an internal meeting to discuss later this week.

-----Original Message-----
From: Jacobus, Thomas P WAD [mailto:Thomas.P.Jacobus@usace.army.mil]
Sent: Thursday, October 09, 2014 3:42 PM
To: Shamet, Stefania
Cc: Bemis, James K (Jim) NAB
Subject: RE: Anticipated Bypass (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Stef,

Jim Bemis told me he talked to you today and you asked me to resend the outline of our rational for an anticipated bypass.

Tom

-----Original Message-----
From: Jacobus, Thomas P WAD
Sent: Monday, September 15, 2014 9:42 AM
To: 'Shamet, Stefania'
Subject: Anticipated Bypass (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Stef,

As we discussed this morning, this is the background and rationale for Washington Aqueduct's interest in requesting an anticipated bypass for each of the two Georgetown Sedimentation Basins.

Washington Aqueduct needs to make one discrete discharge from each of the two Georgetown sedimentation basins in accordance with the conditions expressed below in order to remove sediment that accumulated during a period of time when the newly installed dredge cabling and winch system was being integrated into normal operating practices for continuously removing sediment accumulating in those two basins. The discharge of sedimentation basin # 2 is critical, due to sediment buildup in what may be best described as a "blind spot" in the basin's dredging system coverage. The discharge of sedimentation basin # 1 is necessary to ensure similar, but unforeseen, problems are not occurring in the basin, and to perform a maintenance check of its irregular bottom. We ask for these discrete bypasses because the residuals processing system in place at the Washington Aqueduct was meant to address day-to-day maintenance collection of accumulated sediments, but not the excess sediment known to be in basin # 2, which may be precipitating odor problems that must also be brought under control. There are no feasible alternatives to discharge to resolve these maintenance issues.

We therefore are consulting with you as we consider requesting permission to make one anticipated bypass in the form of river sediment residuals from each of the two sedimentation basins at Georgetown beginning

as soon as the Potomac River reaches the discharge threshold elevation discussed in the next paragraph after the approval of this request. This discharge would use Outfalls 003 and 004. We would ensure they would be done before February 15, 2015 and therefore would be outside the defined spawning season windows as described in Part II, Section C, paragraph 12.

We would make this request in accordance with Part II, Section B, paragraph 3 of our NPDES Permit DC 0000019 dated October 20, 2008, which is still in effect pending action on our renewal submission on March 14, 2013. The Federal Facilities Compliance Agreement that had been in effect to support the construction and start-up of the residuals collection and treatment facilities has expired. We are requesting the same flow conditions (i.e., 2.90 feet on the Little Falls gauge) and the same waiver on concentrations on Total Suspended Solids and the concentrations of the other listed pollutants in Part I, Section B.

To mitigate any potential negative effects of this discharge, Washington Aqueduct would use additional flushing water to dilute the sediment returned to the Potomac River, and would, as under the FFCA, extend the time taken for the discharge to a minimum of 36 hours for each basin.

The reasons for finding ourselves in this situation are difficult, but direct in nature. The dredge cabling and winch system is a very complex, one of a kind system built specifically to fit into the irregular (i.e., not rectangular) shape and to accommodate an undulating and varying depth bottoms of these two sedimentation basins. These basins were created in about 1900 from the larger distributing reservoir built at Georgetown in 1855. The complexity of the remotely controlled dredges operating with various programs to move via a suspended cable system has been an ongoing challenge.

To address this challenge, in the last 12 months dredging teams formed from within the organization supported by instrument and control technicians and consultants have improved the rate at which material is removed. We have been studying a design modification to keep the wind from blowing the discharge hose into the moving dredge which causes the electrical connections in the hose assembly to be cut. We found that the system as originally designed could not effectively dredge one section of the larger of the two basins because the bottom depth was incorrectly considered in the design of the length of the cutter nose. We have explored alternate methods, i.e., using a supplemental remote dredge that crawls on the bottom of the basin and discharges to the same chamber that sends the dredged solids to the Residuals Processing Facility. That appears to be a feasible solution; however, the bulk of the solids that have accumulated over the past nearly two years while we have been working on operational and engineering solutions is too great to be removed practically by such a swimmable dredge.

If the solids were completely removed and we started from a clean bottom, our calculations show that dredging with the swimmable dredge or other solution the area not reached by the cable guided dredge once every three months or so would be sufficient to stay on top of the accumulation. The two thirds of the area that is serviced by the cable guided dredge can be effectively controlled with the operational and programming improvements we have put in place. Still, the sediment that has accumulated over the last 22 months could have the potential to affect the quality of the settled water leaving the Georgetown Sedimentation Basins. We are getting higher values for our MIB and geosmin tests from the basins at Georgetown than we do at Dalecarlia. Both basins at Georgetown are significantly adding to the combined concentration of geosmin and MIB when we analyze the water entering the basins and the water leaving them. That has a relationship to the taste and odor of the finished water.

We have had good success with the automated continuous sediment removal from the four sedimentation basins at the Dalecarlia water treatment plant, and the Residuals Processing Facility is running well. We are making improvements to the Dalecarlia Reservoir forebay system to add grinders to handle the leaves and small sticks that enter that portion of the reservoir. Our operators and consultants are continually optimizing all of these functions. However, the design of these facilities was predicated on continuous removal of sediment from the Dalecarlia basins, with delays at Georgetown only if winter ice on the basins prevented the dredge from moving. As outlined earlier, the sediment that has accumulated, especially in Sedimentation Basin #2, at Georgetown exceeds the system's design capacity for it to be removed by dredge and sent to the Residuals Processing Facility for removal, either normally or with a standalone

project. We contracted for an investigatory remote controlled swimmable dredge this spring to determine if it was going to be possible to catch up. We determined that that would work to augment the existing cable guided dredge but only if the bottom was clean to begin with. This has less to do with dredge capacity, but, as stated above, more to do with the design capacity of the Residuals Processing Facility, which could not process that much sediment all at once or over a short period. The related odor problem concerns, similar irregular bottom and basin shape, etc., makes discharge of Basin # 1 vital to stay ahead of any potential deposition or maintenance problems there as well.

That said, we continue to work with our in-house engineering staff and our consultants to optimize all aspects of the dredging at Georgetown and we do not think the current system should be abandoned and replaced with some other system. This has been a learning process and we are getting better at it and we believe that with a clean bottom we can demonstrate our ability to systematically keep up with the daily deposition in accordance with the system design and augmented dredging.

We believe that the bypass would meet the standards required by Part II, Section B., and paragraph 3, subparagraph d. i. of NPDES Permit DC 0000019 because:

The residuals build-up and related odor control issues to the needed bypass were unavoidable. The bypass is necessary to recover from the difficulties in operating and maintaining the one-of-a-kind dredging system installed at Georgetown. The additional unexpected and unanticipated problem of the designed dredge not being able to reach one section of basin #2 that has an undulating and sloped bottom has contributed to the build-up of solids. The existence of the higher values from our MIB and geosmin tests of the basins indicates investigation of basin # 1 is also appropriate. Best efforts of Washington Aqueduct have been employed and much progress has been made in learning to operate the dredge systems. We continue to bring manufacturer's representatives to the site to try new techniques to improve the production volume by increasing the up-time for the equipment and to allow it to operate under severe weather conditions.

The bypasses are necessary to ensure that a deterioration of finished water quality does not occur. Previous practice at the Georgetown sedimentation basins was to drain and clean each basin via discharges to the Potomac River on an interval of six months. The basins we are requesting the bypass permission for have been in service accumulating residuals for almost two years. Because of the very large size of basin # 2, we have not yet run out of capacity to store the residuals and allow the sedimentation process to continue, but we have very old material, the organic portion of which has become very dark and very odorous. A similar concern is arising with basin # 1. This indicates a presence of decay products which certainly are beginning to have a negative effect on the settled water that leaves these basins and goes to the McMillan Water Treatment Plant for filtration and disinfection. The longer the organics stay at Georgetown, the more these decay reactions will occur and the more the water sent for further processing is affected. While the water being produced at the McMillan Water Treatment Plant currently meets all of the requirements of the Safe Drinking Water Act regulations the unexpected and unavoidable long-term retention of the residuals at Georgetown basin #2, as well as whatever is happening with basin # 1, adds potential uncertainty to that process. As a result, we feel obliged to act sooner rather than later, before the risk to water quality, and thus human health, rises too sharply.

There is no feasible alternative to discharge. While the residuals processing facility was designed and is operating to dewater and dispose of the dredged residuals it was designed from the standpoint that the Georgetown basins would start empty, not full. Basin #2 especially is full in a zone not effectively reached by the existing dredge for the reasons described above. To establish a temporary dewatering facility at Georgetown to supplement the newly built residuals processing facility would be prohibitively expensive and the truck traffic generated in this residential neighborhood would be onerous. The longer the material builds up in the basins, the further behind we get.

The required notices can be made and we can provide the documentation necessary for use to fully comply with Part II, Section B., paragraph 3, subparagraph c of NPDES Permit DC 0000019; and

Washington Aqueduct meets the requirements of Part III Section E of the permit. The Washington Aqueduct is in full compliance with Part III, Section E of NPDES Permit DC 0000019, both in the past, and with this bypass by continuing to refrain from discharging any residuals during the period of February 15 to June 30 since the current permit has been in effect and the accompanying FFCA had been in effect.

For operational reasons we would like to complete the bypasses by October 31, 2014.

I will be available to answer any questions.

Thank you.

Tom
202-764-0031

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Caveats: NONE

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